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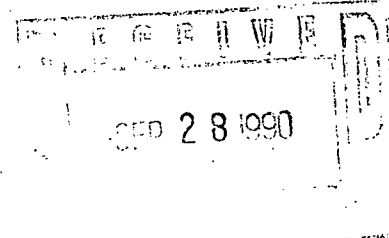
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A-90-16

A-90-16
IV-E-5UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460OFFICE OF
AIR AND RADIATIONMEMORANDUM

SUBJECT: Meeting with Representatives of Ethyl Corporation

FROM: David J. Kortum, Environmental Engineer, Field Operations and Support Division (EN-397F)

TO: Air Docket (LE-131)

David J. Kortum
9/26/90

On September 25, 1990, a meeting was held between representatives of EPA and the Ethyl Corporation regarding Ethyl's request to use MMT in unleaded gasoline. Those present from EPA included: Terry Davies, Richard Morgenstern, Alex Cristofaro, Dwight Atkinson, Dana Ott, Mary Smith, and David Kortum. Representatives of Ethyl Corporation included: Jeffrey Smith, Gary Ter Haar, and Bill Brownell. Jeffrey Smith presented a brief overview of Ethyl's request to use MMT in unleaded gasoline. Dr. Ter Haar described the results of the testing program which Ethyl has conducted regarding this additive. EPA representatives asked several questions regarding increases in airborne manganese levels. Dr. Ter Haar expressed Ethyl's belief that changes in airborne manganese levels would be minimal and, when compared to manganese exposure through diet, insignificant.

I have attached a copy of a handout which was distributed by Dr. Ter Haar at the meeting.

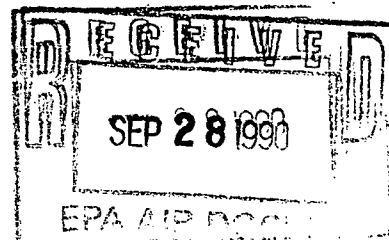
Attachment

A-90-16

It's Time For Americans To Reap The Benefits Of HITEC 3000 Performance Additive

Ethyl has shown that use of the additive will have these benefits:

- Reduce NOx and CO tailpipe emissions
- Have no practical, adverse effect on HC emissions
- Enable a reduction of the aromatic content of unleaded gasoline
- Facilitate compliance with tightened gasoline volatility standards
- Reduce total pollutant emissions by 1.7 billion pounds annually by 1999
- Potentially reduce ambient ozone concentrations in some cities
- Save more crude oil annually than is purchased each year for the Strategic Petroleum Reserve
- Be compatible with gasolines containing oxygenates, methanol or ethanol
- Cause no damage or deterioration of automobile emission control systems
- Cause no health or environmental problems



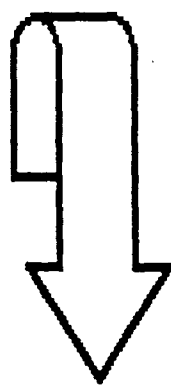
Overall Tailpipe Emissions Are Reduced By 8 Percent

The additive reduces overall tailpipe emissions by 8 percent. In 1999, Ethyl estimates that total annual emissions will be reduced by nearly 1.7 billion pounds as cars with advanced emissions technology comprise the majority of the fleet in the United States.

TOTAL POLLUTANT REDUCTION

USE OF HiTEC® 3000 PERFORMANCE ADDITIVE (pounds per year)

<u>Pollutant</u>	<u>1999</u>
Nitrogen Oxide	644,000,000
Carbon Monoxide	988,000,000
Hydrocarbons*	0
Particulates	1,100,000
Sulfur Oxides	150,000
Aromatics	35,200,000
Formaldehyde	3,500,000
Total	1,671,950,000

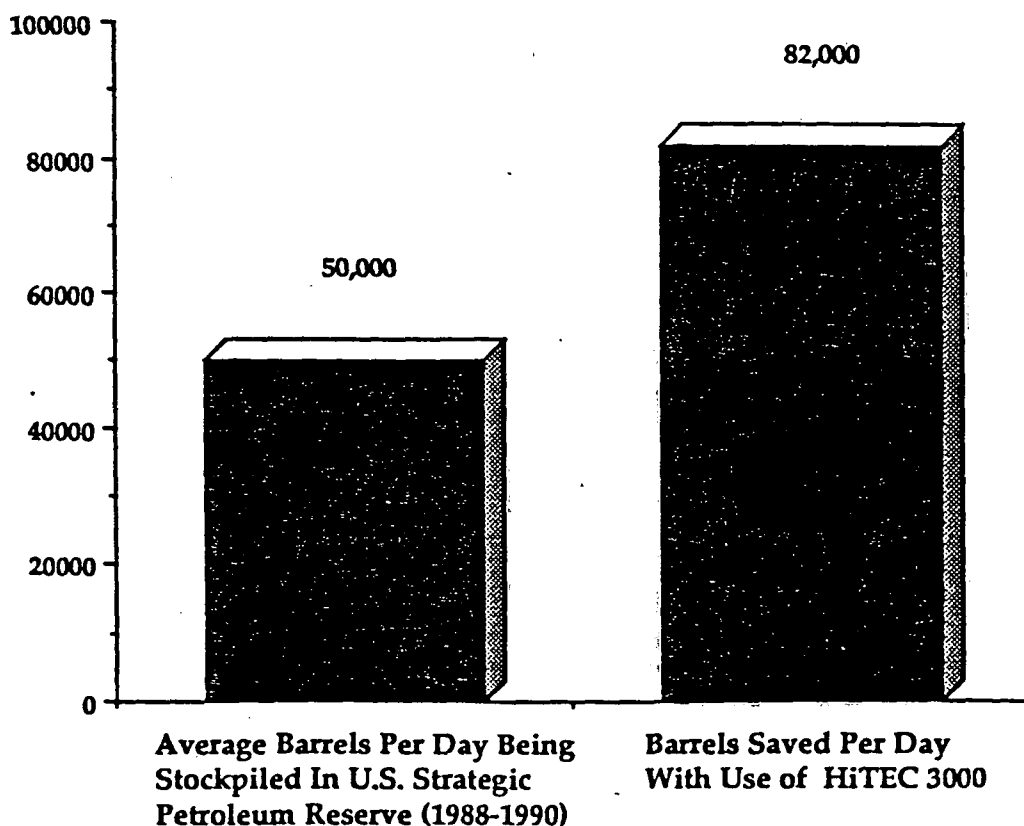


*assumes use of HiTEC® 3000 performance additive replaces aromatics in commercial fuel

Refineries Will Be Able To Operate Under Less Severe Conditions

Since the additive raises octane up to one octane number, refineries are able to reduce processing "severity" and thereby reduce the amount of crude oil needed. Experts estimate that crude oil imports could be reduced by 30 million barrels per year if the additive were used in unleaded gasoline. That would create a potential reduction in the U.S. trade deficit of between \$500 million and \$1 billion a year. The 30 million barrels saved would be more than the amount of oil stored annually in the Strategic Petroleum Reserve.

HiTEC® 3000 AND SAVINGS IN CRUDE OIL



MANGANESE AND PUBLIC HEALTH
(Re: Ethyl Waiver Application for HiTEC 3000)

September 21, 1990

I. Manganese Is A Common Element Essential For Human Life

- Normal daily intake of manganese ranges from 2,000 to 9,000 micrograms, averaging about 3,000 micrograms. On June 19, 1990, the Food and Drug Administration proposed a recommended daily intake of 3,500 micrograms of manganese for adults.
- The maximum intake of manganese after 70 years of use of the Additive would be less than two micrograms per day (ingestion and inhalation) compared to intake from one daily multivitamin tablet (1,000-10,000 micrograms), one cup of tea (1,200 micrograms) or a slice of whole wheat bread (334 micrograms).
- The cumulative concentration of manganese in soil at a point 5 meters from a busy expressway caused by 50 years of use of the Additive would be less than the concentration caused by spilling one cup of tea, one time, at that point (4.6 versus 6.9 parts per million).
- After 50 years of use, the cumulative contribution of the Additive to manganese concentrations in soil 5 meters from a busy expressway would be the same as that resulting from watering one's lawn once per year (with a normal watering rate of 1 inch) during this period.

II. Recent EPA Sponsored Documents Relating To Manganese

1984: EPA released a comprehensive "final report," titled "Health Assessment Document for Manganese" in August 1984. The report was subjected to a peer review. The document's findings were endorsed by the EPA Science Advisory Board. Among other things, the document (p. 6-23) stated that the lowest observed effect level (LOEL) of manganese for neurological problems was 300 micrograms per cubic meter of air (300 ug/m³).

1985: The EPA (in the Federal Register, Vol. 50, No. 156, 13 August 1985, pp. 32627-8) announced a "decision not to regulate manganese under the Clean Air Act" based upon the findings of the Health Assessment Document for Manganese. The EPA notice stated that (1) "present ambient air concentrations of manganese do not pose a significant risk to public health; (2) public exposure to manganese is presently far below any level associated with non-carcinogenic serious health effects; (3) evidence currently available does not indicate that manganese is carcinogenic."

1986: The Health Effects Institute (HEI, 215 First Street, Cambridge, MA -- an independent scientific body jointly funded by EPA and automobile manufacturers) published a study, requested by EPA, titled "Potential Health Effects of Manganese in Emissions from Trap-Equipped Diesel Vehicles." Among other things, the HEI report stated that:

- EPA had derived manganese levels ranging between 5 and 36.5 ug/m³ below which there would be no observed respiratory effects (p. 26).
- It was "unlikely" that adverse health effects (neurological or respiratory) would occur at a manganese emission level of 0.5 ug/m³ of ambient air. The 0.5 level is, conservatively, ten times higher than that which would result were HiTEC 3000 (MMT) used (at a concentration of 1/32 gm/gallon) in all U.S. unleaded gasoline.

BOTTOM LINE: Conservatively, the use of HiTEC 3000 (MMT) in all U.S. gasoline would cause no more than a 0.017 ug/m³ increase of manganese in ambient air. That, in turn, would cause a total, average manganese level of no more than 0.05 ug/m³ -- 100 times less than the lowest of the observed respiratory effect levels (5 to 36.5 ug/m³) derived by EPA -- and 6,000 times less than the lowest observed neurological effect level (300 ug/m³) cited by EPA in the Health Assessment Document.

III. Studies and Authorities Supporting No Adverse Health Effects From Use of the Additive

- The Canadian Department of National Health and Welfare concluded in 1978 that "there is no evidence at present to indicate that expected ambient manganese concentrations [from automobile exhaust] would constitute a hazard to human health."
- In 1986, the Royal Society of Canada again reviewed the health literature and concluded that "the general public has a wide margin of health safety with respect to the worst case use of MMT in gasoline."
- In 1987, an official from Australia's Department of Health concluded that "there is no toxicological evidence to suggest that the increased level of airborne Mn resulting from combustion of MMT as a petrol additive is likely to constitute a health risk to the general population."
- The World Health Organization in 1987 concluded that an annual average concentration of 1 ug/m^3 -- about ten to one hundred times higher than maximum urban ambient concentrations associated with use of the Additive -- "incorporates a sufficient margin of protection for the most sensitive population group."
- In a letter of July 17, 1990 to the docket in this proceeding, Environment Canada stated: "Health and Welfare Canada has evaluated the possible health effects of using MMT in gasoline. That department has advised Environment Canada there would be no significant increase of manganese in the environment to affect public health by the use of MMT in gasoline."
- A 1990 review and assessment of the health literature on manganese by Roth Associates, a firm staffed by experts in toxicology and epidemiology who have served on EPA scientific advisory panels: "None of the concerns raised by commenters provide a sound basis for concluding that the addition of MMT to gasoline as proposed by Ethyl would endanger public health. In conclusion, we have found that use of MMT is unlikely to affect public health adversely. The anticipated increase of manganese in the environment from use of MMT is sufficiently small in comparison to the natural levels of this element and human intake of it that the body's ability to maintain consistent manganese levels should be unaffected."
- Dr. Henry M. Wisniewski (neuropathologist, expert on aging process, Director of Institute for Basic Research of N.Y. Department of Health): "Ethyl provided enough evidence to show that adding manganese will not negatively affect human health and environment . . . There is no evidence to suggest that [neurotoxic] effects take place at lower Mn levels . . . [The evidence] is clearly in favor of approving Ethyl's application."
- Dr. Robert Lauwerys (Professor of Industrial Toxicology and Occupational Medicine, Director of the Unit of Industrial Toxicology and Occupational Health at University of Louvain, Brussels): [The World Health Organization's recommended guideline of 1 ug/m^3 average manganese exposure] "should incorporate a sufficient margin of protection for the most sensitive population group." (Note: The Additive would result in ambient manganese levels 10 to 100 times less than 1 ug/m^3 .)
- Dr. W. Clark Cooper (former Medical Director of U.S. Public Health Service): Following a 1984 comprehensive review of then-existing literature on public health implications of manganese in the environment, he concluded that the "minute increments of Mn that would result from the use of MMT as a gasoline additive should not have any impact on the public's health." Following a recent review of available literature, he stated that "[A]s of July 1990, I am not aware of any new evidence to alter the conclusions [of the 1984 review]; if anything they have been strengthened."